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Five facts on preferences and beliefs for risk, time, and ESG

Pension professionals and the general population

Jorgo Goossens

Academic paper



Five facts on preferences and beliefs for risk, time, and ESG: Pension professionals and the general population*

Jorgo T.G. Goossens[†]

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Abstract

I compare survey data on preferences and beliefs between the general population and a population of pension professionals. The survey elicits risk preferences, time preferences, ESG preferences, and beliefs about ESG investments. Pension professionals additionally predict the preferences and beliefs of the average individual in the general population. I document five facts. Our results show that pension professionals have distinct risk preferences, time preferences, and ESG preferences, compared to the general population, but pension professionals can accurately predict the average preferences of the general population. Pension professionals are more risk tolerant, more patient, more time consistent, and prefer ESG performance over financial performance in personal pension investments. On average, pension professionals believe returns and volatility of an ESG invested portfolio to be similar to the market portfolio. Pension professionals predict that the average individual in the general population prefers financial performance over ESG performance, expects lower returns on an ESG invested portfolio, and expects higher volatility on an ESG invested portfolio.

Keywords: survey, risk, time, ESG, pension

JEL Codes: D81, G11, G51

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[†]Radboud University, Institute for Management Research. Corresponding author: jorgo.goossens@ru.nl

Pension capital is a major component of savings for many individuals worldwide, and pension funds are some of the largest investors in the world. The average individual net pension wealth in 2022 at the time of retirement is about \$1,057,000 in the Netherlands, \$639,000 in the United States, and \$534,000 in the OECD. Assets in pension plans amounted to \$51,500,000 million in 2022 in the OECD area. The United States had the largest pension market within the OECD area with assets worth \$35,000,000 million, representing 67.9% of the OECD total, and the Netherlands had assets worth \$1,500,000 million representing 3.0% of the OECD total.¹ The worldwide shift from defined benefit (DB) to defined contribution (DC) pension plans challenges pension plan members, who have been given greater responsibility to manage their pensions such that it best suits their situation. Ideally, life-cycle consumption and investing reflects the preferences of the pension plan member. This is even more challenging in collective pension plans, where pension professionals make decisions on behalf of the pension plan member. Overall, it remains rather unknown how individuals' preferences for risk, time, and ESG look like in the pension domain, and what pension professionals believe such preferences to be.

I fill this gap by a unique comparison of preferences and beliefs between a population of pension professionals and a general representative population. In cooperation with one of the largest pension provider in the Netherlands, I field a purposely-designed survey that measures preferences, beliefs, and second-order beliefs from actual pension professionals. The group of pension professionals ($N = 51$) consists mainly of pension fund board members, pension economists, strategists, and asset managers. I compare the high-quality responses of the pension professionals with a representative group of the general Dutch population ($N = 2297$). The general population responded to exactly the same questions as the pension professionals, and the general population was surveyed by Goossens and Knoef (2024), via the LISS panel in the Netherlands.

For both populations, I elicit preferences for risk, time, and ESG as well as beliefs about returns and volatility on an ESG invested portfolio. Additionally, I elicit the second-order beliefs of the pension professionals about the general population. That is, I let the pension professionals predict the preferences and beliefs for the average individual in a general population. To measure risk preferences, I use the seminal single-choice list method of Eckel and

¹OECD (2023), Pensions at a Glance 2023: OECD and G20 Indicators, OECD Publishing, Paris, <https://doi.org/10.1787/678055dd-en>.

Grossman (2008) and Eckel and Grossman (2002): individuals choose one gamble, out of six gambles, they prefer to play. To measure time preferences, I use the matching task of Rieger et al. (2015) and Wang et al. (2016): individuals state an amount of money that makes them indifferent between receiving an amount of money now and an amount of money later. To measure ESG preferences, I build upon Degryse et al. (2024) and Starks (2023): individuals state whether they prefer financial performance (i.e., value) or ESG performance (i.e., values) in their pension investments. To measure beliefs about ESG return and volatility, I use questions similar to Giglio et al. (2023): individuals state their return and volatility expectations on an ESG invested portfolio, compared to the market portfolio.

I collect the results in five facts. Facts 1 and 2 concern risk and time preferences, while facts 3 and 4 concern preferences for ESG and beliefs about ESG investments. Fact 5 is about the relation between personal preferences and second-order beliefs. Fact 1: pension professionals have significantly different risk and time preferences compared to the general population. The general population is more risk averse and time inconsistent. Fact 2: pension professionals can accurately predict risk and time preferences of the representative population. The predicted risk and time preferences by pension professionals are statistically indistinguishable from the revealed preferences of the general population.

Fact 3: pension professionals have the belief that the general population cares more about financial performance than ESG performance in pension investments. The beliefs of the pension professionals are significantly different from their second-order beliefs: pension professionals believe that they care more about ESG performance in their pension investments compared to their second-order beliefs about the general population. Fact 4: a majority of the pension professionals believe that returns on an ESG invested portfolio are similar to returns on the market portfolio, while beliefs on the volatility of ESG investments are more heterogeneous. Additionally, pension professionals believe that the general population expects significantly lower returns and higher volatility on an ESG-invested portfolio compared to their own expectations. Fact 5: pension professionals' preferences for risk and ESG are not correlated with their second-order beliefs, but time preferences are correlated with their second-order beliefs.

The results contribute to three strands of the literature. The first explores the characteristics of managers and senior executives. Brenner (2015), “Managerial attitudes and corporate actions” (2013), and Kaplan et al. (2012) measure risk preferences of (senior)

executives and (senior) managers. This literature suggests that executives personal traits and managerial attitudes are important factors in corporate policies, CEO compensation, and performance. However, little is known on the time preferences, ESG preferences, and (second-order) beliefs about ESG of (senior) executives.

Second, I contribute to understanding delegated decision making by having the unique ability to compare identically elicited preferences and (second-order) beliefs across a general lay population and a population of pension professionals. Gathering responses of different populations to identical questions, including predictions, helps to improve science but to date relatively little work has been done in this direction (DellaVigna et al., 2019).

The third strand explores preferences and beliefs regarding ESG investments. Degryse et al. (2024) study preferences for financial performance versus sustainability performance, which Starks (2023) calls investing for ‘value’ versus ‘values’. Giglio et al. (2023) study return expectations of ESG investments, including ESG investment motives and climate concerns. However, the attitudes of (senior) executives and managers about ESG investments are unknown. Specifically, little is known about volatility expectations and second-order beliefs regarding ESG investments.

I. Sample and methodology

I have designed an experiment to measure preferences and beliefs for risk, time, and ESG of pension professionals. Partnering with one of the largest pension providers in The Netherlands, I conducted a first online survey experiment with pension fund board members ($N = 26$) from 15 August 2023 to 22 August 2023. I conducted a second online survey experiment with pension economists, strategists, and asset managers ($N = 25$) from 8 December 2023 to 15 December 2023. The pension provider invited these pension professionals by e-mail. The experiments yield high-quality responses for a total sample of $N = 51$ pension professionals.

Not uncommon in the fields of economics and finance, 84% of the sample is male (Table 3 in the Appendix). The average age is 49 years with an average of 15 years of experience in the pension industry. 84% has a partner with an average amount of 2 children. The average time to complete the experiment is about 12 minutes.²

²The completion time comes from the second experiment, as duration has not been measured for the first

The experiment has three parts: (i) risk, (ii) time, and (iii) ESG. Each part contains three subsections. The first subsection measures the personal preferences of the pension professionals, the second subsection measures the beliefs the pension professionals have about the preferences of their pension fund population, the third subsection measures the beliefs the pension professionals have about the preferences of the general Dutch population. The second and third subsections I call second-order beliefs. The second subsections are not used in this study. Overall, as a result, I use a total of two questions from the risk part, four questions from the time part, and six questions from the ESG part. So, a pension professional answers in total twelve questions. The order of the parts, subsections, and questions is fixed.

The risk and time preference questions have been identically asked (i.e., identical wording, identical amounts, etc.) in a representative sample of the Dutch population using the LISS (Longitudinal Internet Studies for the Social Sciences) panel. The questions have been asked by Goossens and Knoef (2024) in March 2020 through the LISS panel. This allows me to compare the elicited second-order beliefs of pension professionals with the revealed risk and time preferences of the same underlying population.³

$N = 2297$ LISS panel members have responded to the risk and time preference questions. 48% is male, 72% has a partner, and the average number of respondent's children is 1 (Table 3 in the Appendix). The average respondent's age is 56 years (Goossens and Knoef, 2024, invited participants between 40-70 years in their survey).

A. Risk preferences

I use the risk preference task of Dave et al. (2010), which is an adapted version of the seminal single-choice list elicitation method of Eckel and Grossman (2002) and Eckel and Grossman

experiment with pension fund board members. One individual took more than 4 hours, probably forgetting to definitively submit his or her responses after finishing the survey, which is left out of the duration measure.

³The LISS panel is widely considered as one of the most comprehensive, reliable, and representative samples used in the household finance literature Noussair et al., 2013; Dimmock et al., 2015; Parise and Peijnenburg, 2019. The LISS panel is based on a probability-address based sample of households (no self selection) drawn from the population register of the Netherlands and administered by CentERdata (Tilburg University). CentERdata is a non-profit research institute focused on academic, social, and policy-related research. The institute is a prominent player in conducting surveys, policy analysis, and consumer research. Households without a computer and/or internet connection receive a computer and/or internet connection free of charge. This household panel receives online questionnaires each month on different topics. When respondents complete a questionnaire, they receive a monthly incentive.

(2008), to measure risk preferences of pension professionals and the Dutch population. See Table 4 in the Appendix.

The task requires the individual to answer one question. An individual makes a single choice among six gambles, all with probability 0.5 of winning a higher prize. The range of gambles includes a safe choice involving a sure payoff of €5600 with zero risk. Then, moving from Gamble 1 to 5, the gambles increase in both expected return and risk (standard deviation). Gamble 6 involves only an increase in risk, with an expected return equal to Gamble 5. More risk averse subjects choose low risk, low return gambles such as Gambles 1 to 4; risk-neutral subjects choose Gambles 5 or 6; risk-seeking subjects choose Gamble 6. This simple method allows categorization of individuals into six risk tolerance categories.

The amounts I use in the task are a factor 20 higher than the original amounts of Dave et al. (2010). I have done this since these identical values have also been used in the LISS survey of Goossens and Knoef (2024), pensions typically involve large amounts, and risk preferences are domain dependent O’Donoghue and Somerville (2018) and van Rooij et al. (2007).

The pension professionals answer an additional question: “*Predict: Which gamble is chosen on average by the Dutch population?* ” This yields the second-order beliefs of risk preferences.

B. Time preferences

I use an adapted version of the survey matching task of Rieger et al. (2015) and Wang et al. (2016) to measure time preferences of pension professionals and the Dutch population. See Table 5 in the Appendix.

The task requires the individual to answer two questions. In the task individuals are asked to state an amount for a delayed payment (Option B) which makes them indifferent with an immediate payment of €10,000 (Option A). Participants give an amount € X_1 for a delayed payment of 1 year and an amount € X_5 for a delayed payment of 5 years. The task elicits the 1-year subjective discount rate and the 5-years subjective discount rate. The subjective implied discount rates are a proxy for the time preferences, i.e., patience. Suggestive evidence for present bias, i.e., time inconsistency, is found when the 1-year discount rate exceeds the 5-years discount rate Thaler, 1981.

To avoid confounding effects of inflation, the task states that prices in the future remain the same as today’s prices. The pension professionals answer for both horizons the additional questions: *“Predict: What is the average amount X chosen by the Dutch population such that option B is as attractive as option A ?”* This yields the second-order beliefs of time preferences.

C. ESG preferences and beliefs

The ESG part first measures whether investment motives are financially or ESG driven. This question is similar to that of Degryse et al. (2024), and my question reads as follows: *“ESG criteria are environmental, social and governance criteria for a company’s activities that may impact society or the environment. Given a 5-points scale, what do you personally choose for your own retirement? 1. I only care about financial performance in my pension, ..., 5. I only care about ESG criteria in my pension.”* Hence, this question measures whether an individual prefers to invest for value (i.e., financial performance) or values (i.e., ESG performance) (Starks, 2023).

Second, the ESG part measures beliefs about the returns of an ESG portfolio. The question reads as follows: *“Compared to the market, returns on ESG invested portfolios are in the long run: much higher, higher, equal, lower, or much lower? What do you personally think?”* Third, the ESG part measures beliefs about the volatility of an ESG portfolio. The question reads as follows: *“Compared to the market, volatility of ESG invested portfolios is in the long run: much higher, higher, equal, lower, or much lower? What do you personally think?”* These two belief questions are similar to those of Giglio et al. (2023).

Overall, I use three questions to measure the pension professional’s personal investment motives and beliefs. An additional equal amount of three questions follow to measure their second-order beliefs about the Dutch population. That is, they need to predict for each of the three questions the average chosen answer by the Dutch population.

II. Results

In this section, I explore the preferences, beliefs, and second-order beliefs about risk, time, and ESG from our surveys. I summarize the results in five facts.

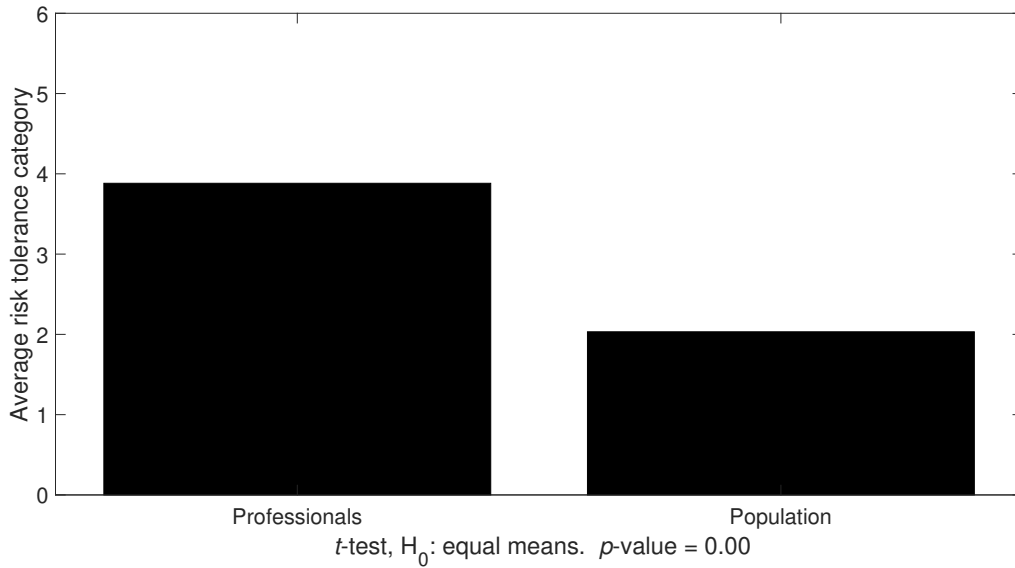
Fact 1

“Pension professionals have significantly different risk and time preferences compared to the general population. The general population is more risk averse and time inconsistent.”

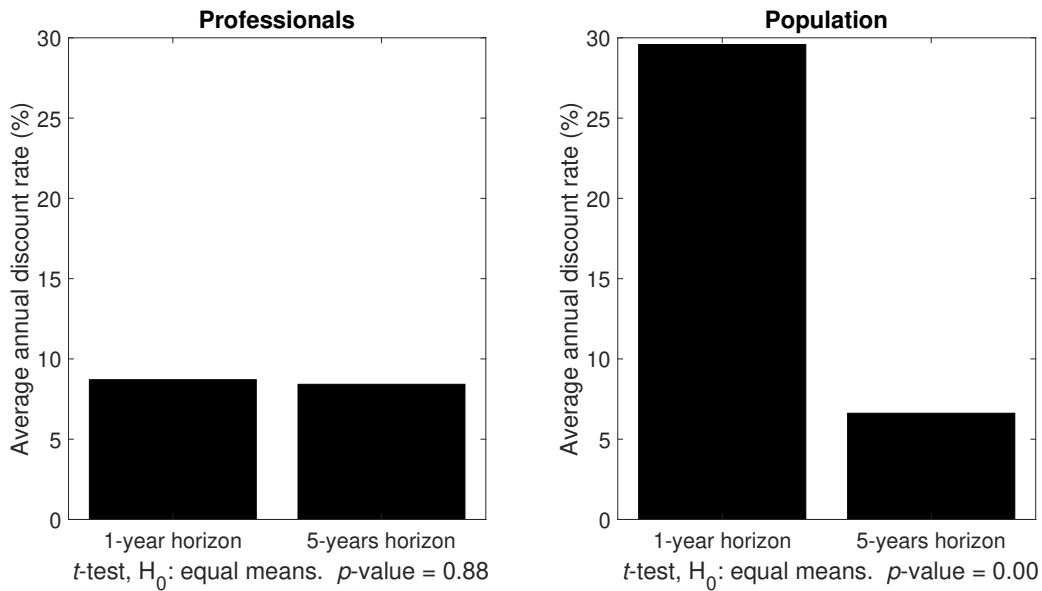
Figure 1a shows that the average pension professional is more risk tolerant than the average individual in the general population. The difference in average risk tolerance categories is almost two. This difference is statistically significant at any reasonable significance level, as indicated by the p -value of 0.00, which follows from a two-sample t -test with H_0 : “means are equal”. Expressed in terms of the common CRRA parameter, γ , the average pension professional has $\gamma \in (0.50, 0.71)$, while the average individual of the general population has $\gamma \in (1.16, 3.46)$. Hence, the result is also economically sizeable, as these risk aversion parameters would imply rather different asset allocations in, e.g., the seminal life-cycle investment framework of Merton (1969). Our finding is in line with “Managerial attitudes and corporate actions” (2013), who find that US CEOs are significantly more risk tolerant than the US lay population.

Figure 1b shows that the average pension professional has (almost) constant subjective annual discount rates over horizons of 1 year and 5 years, while the average individual in the general population has significantly different subjective annual discount rates over horizons of 1 year and 5 years. More specifically, in the sample of the general population, the average subjective annual discount rate over a 1-year horizon is 30% and the average subjective annual discount rate over a 5-years horizon is 7%. As indicated by the p -value of 0.00, which follows from a two-sample t -test, I reject the null hypothesis H_0 : “means are equal” at any reasonable significance level. Stated differently, this is evidence that the average individual in the general population is a time-inconsistent discounter. These individuals discount the present significantly more than the future, by 23 percentage points, which is a sizeable difference. This finding is in line with the previous literature that individuals are typically present biased, i.e., time inconsistent (Frederick et al., 2002; Thaler, 1981).

Interestingly, in the sample of pension professionals, the average subjective annual discount rate over a 1-year horizon is 9% and the average subjective annual discount rate over a 5-years horizon is 8%. As indicated by the p -value of 0.88, which follows from a two-sample t -test, I cannot reject the null hypothesis H_0 : “means are equal”. Stated differently, this is evidence that the average pension professional is a time-consistent discounter. Thus, contrary to the general population, pension professionals are not subject to present bias, which



(a) **Risk preferences.** This figure displays the average observed risk tolerance category by sample type. The risk tolerance category follows from an adapted version of the single choice list method of Eckel and Grossman (2002) and Eckel and Grossman (2008).



(b) **Time preferences.** This figure displays the average annual subjective discount rates for 1-year and 5-years horizons by sample type. The time preference measure follows from an adapted version of the survey task of Rieger et al. (2015).

Figure 1: **Risk and time preferences of pension professionals and the general population.**

Table 1: **Preferences and beliefs for risk and time: pension professionals and the general population.**

	Mean	St. Dev.	N
<u>Risk preferences</u>			
A. Pension professionals	3.88	1.31	51
B. Beliefs pension professionals about general population	2.02	0.81	51
C. General population	2.03	1.47	2297
<i>t</i> -test, H_0 : equal means B and C. p -value = 0.95			
<u>Time preferences</u>			
<i>I. Annual discount rate, 1-year horizon</i>			
A. Pension professionals	1.09	0.11	51
B. Beliefs pension professionals about general population	1.10	0.11	51
C. General population	1.30	1.41	2297
<i>t</i> -test, H_0 : equal means B and C. p -value = 0.33			
<i>II. Annual discount rate, 5-year horizon</i>			
A. Pension professionals	1.08	0.07	51
B. Beliefs pension professionals about general population	1.08	0.11	51
C. General population	1.07	0.31	2297
<i>t</i> -test, H_0 : equal means B and C. p -value = 0.75			

from a policy-making perspective can be comforting.

Fact 2

“Pension professionals can accurately predict risk and time preferences of the representative population. The predicted risk and time preferences by pension professionals are statistically indistinguishable from the revealed preferences of the general population.”

Table 1 shows summary statistics of the risk and time preferences of the general population and the population of pension professionals, including their second-order beliefs about the general population. Regarding risk preferences, the general population has an average revealed risk tolerance category of 2.03, yielding $\gamma \in (1.16, 3.46)$. On average, the pension

professionals predict that the average individual in the general population has an revealed risk tolerance category of 2.02. This implies that the revealed and believed intervals of the CRRA parameters overlap. Loosely speaking, the revealed and predicted risk preferences are statistically indistinguishable, as I cannot reject the null hypothesis H_0 : “means are equal” as indicated by the p -value of 0.95, following from a two-sample t -test. In other words, pension professionals can very well predict the risk preferences of the general population.

Regarding time preferences, we make the same observation: pension professionals can accurately predict the time preferences of the general population. The general population has a revealed annual subjective discount rate of 30% over a 1-year horizon and of 7% over a 5-years horizon. On average, the pension professionals predict that the average-individual annual subjective discount rate is 10% over a 1-year horizon and 8% over a 5-years horizon. The revealed and predicted time preferences over a 5-year horizon are close, and although the revealed and predicted time preferences over a 1-year horizon appear less close, both the revealed and predicted time preferences across both horizons are statistically indistinguishable, as I cannot reject the null hypothesis H_0 : “means are equal” at both horizons.

Figure 4 in the Appendix shows the observed distributions of preferences and beliefs for risk and time.

Fact 3

“Pension professionals have the belief that the general population cares more about financial performance than ESG performance in pension investments. Additionally, pension professionals believe that the general population cares significantly less about ESG criteria compared to their own preferences.”

Figure 2 shows the distribution of the personal pension professionals’ preferences for investing for value (i.e., financial performance) and values (i.e., ESG criteria) as well as the distribution of their second-order beliefs about the general population. We make two observations. First, pension professionals have the belief that the general population cares more about financial performance than ESG performance. This is evidenced by about 76% of the pension professionals believing that the average individual in the general population will choose to investment for financial performance only, or mostly. Second, the personal

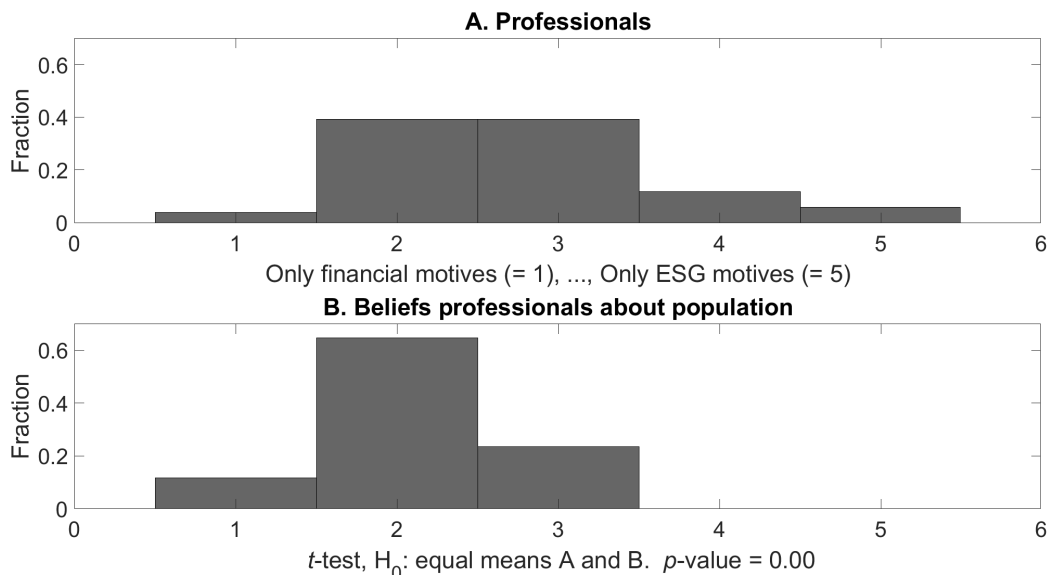


Figure 2: **Preferences and beliefs on financial v.s. ESG motives.** This figure displays the observed preferences and beliefs of financial v.s. ESG motives in the sample of pension professionals.

investment preferences of the pension professionals are different from their second-order beliefs. That is, pension professionals care more about ESG performance, and less about financial performance, in their personal pension investments, compared to what they believe for the general population. This difference is also statistically significant at any reasonable significance level as indicated by the p -value of 0.00, following from a two-sample t -test for the equality of means between the personal pension professionals' preferences and their second-order beliefs about the general population.

Fact 4

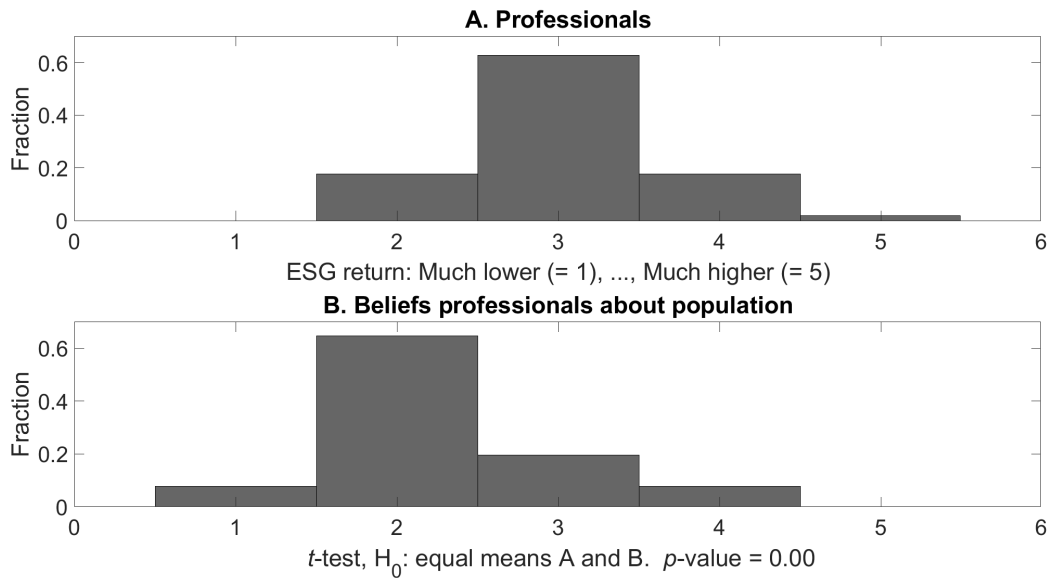
“A majority of the pension professionals believe that returns on an ESG invested portfolio are similar to returns on the market portfolio, while beliefs on the volatility of ESG investments are more heterogeneous. Additionally, pension professionals believe that the general population expects significantly lower returns and higher volatility on an ESG-invested portfolio compared to their own expectations.”

Figure 3a shows the distributions of the personal pension professionals' return expectations for an ESG invested portfolio, compared to the returns on the market portfolio, as well

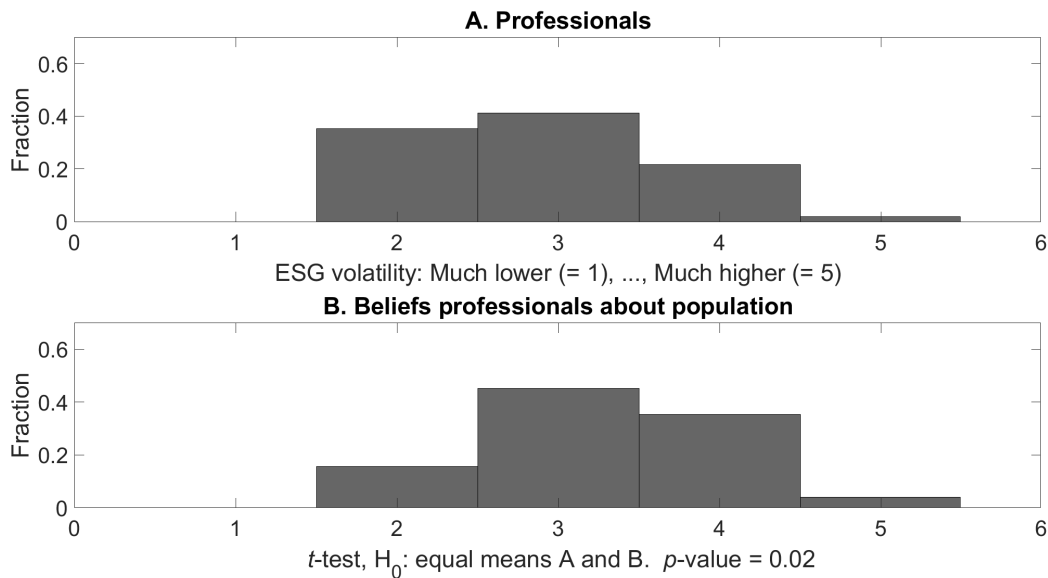
as the distribution of their second-order beliefs about the general population. About 60% of the pension professionals believe that returns on an ESG invested portfolio are similar to returns on the market portfolio. This contrasts the finding of Giglio et al. (2023) that investors expect ESG investments to underperform the market. The other observation is that pension professionals personally believe higher returns on an ESG invested portfolio compared to their second-order beliefs for the general population.

Figure 3b shows the distributions of the personal pension professionals' volatility expectations for an ESG invested portfolio, compared to the volatility on the market portfolio, as well as the distribution of their second-order beliefs about the general population. Personal and second-order beliefs about volatility on an ESG invested portfolio appear more heterogeneous. The observation is that pension professionals personally on average believe in lower volatility on an ESG invested portfolio compared to their average second-order beliefs for the general population. Both findings are statistically significant at any reasonable significance level, as evidence by the p -value which follows from a two-sample t -test on the "equality of means" as the null hypothesis.

Table 6 in the Appendix presents summary statistics of the observed distributions.



(a) **Return ESG portfolio.** This figure displays the beliefs for ESG portfolio returns in the sample of pension professionals. Additionally, it displays the second-order beliefs of the pension professionals for the general population.



(b) **Volatility ESG portfolio.** This figure displays the beliefs for ESG portfolio volatility in the sample of pension professionals. Additionally, it displays the second-order beliefs of the pension professionals for the general population.

Figure 3: **Beliefs and second-order beliefs on return and volatility of ESG portfolio.**

Fact 5

“Pension professionals’ preferences for risk and ESG are not correlated with their second-order beliefs, but time preferences are correlated with their second-order beliefs.”

Table 2 shows the Spearman rank correlation coefficients between pension professionals’ preferences and their second-order beliefs about the general population for risk, time, and ESG. There are three observations. First, I find that pension professionals’ risk preferences are uncorrelated with their beliefs about risk preferences for the general population. Second, I find that pension professionals’ ESG preferences and beliefs are (largely) uncorrelated with their (second-order) beliefs about ESG for the general population. There is a slightly statistically significant positive correlation between beliefs and second-order beliefs about returns on ESG investments. Third, I find that pension professionals’ time preferences are positively correlated with their second-order beliefs, at any reasonable significance level.

Table 2: **Correlation between pension professionals’ preferences and their beliefs for the population, for risk, time, and ESG.** This table shows the Spearman correlation coefficients with significance levels (p -values) between the personal pension professionals’ preferences and their beliefs for the general population.

	Correlation	p -value
Risk tolerance	0.01	0.96
Annual discount rate, 1-year horizon	0.49	0.00
Annual discount rate, 5-year horizon	0.60	0.00
Motives: Financial v.s. ESG	0.19	0.18
Return ESG portfolio	0.28	0.04
Volatility ESG portfolio	-0.03	0.82

Conclusion

This paper measures, with identical elicitation methods, risk preferences, time preferences, ESG preferences, and beliefs about ESG investments among the general population and pension professionals. Additionally, I measure second-order beliefs of pension professionals about the general population for risk, time, and ESG. I collect the results in five facts.

Our results show that pension professionals have distinct risk preferences, time preferences, and ESG preferences, compared to the general population, but pension professionals can accurately predict the average preferences of the general population. Pension professionals are more risk tolerant, more patient, more time consistent, and prefer ESG performance over financial performance in personal pension investments. On average, pension professionals believe returns and volatility of an ESG invested portfolio to be similar to the market portfolio. Pension professionals predict that the average individual in the general population prefers financial performance over ESG performance, expects lower returns on an ESG invested portfolio, and expects higher volatility on an ESG invested portfolio. Comparing responses and predictions across both populations helps to improve science (DellaVigna et al., 2019) and policy making, as different populations will understand each other better in terms of attitudes.

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Appendix

Table 3: **Summary statistics pension professionals and general population.** This table presents summary statistics for our observed samples of pension professionals and the general population. *Male* and *Partner* are dummy variables. *Age* and *Experience* (in the pension sector) are in years. *Children* states the amount of children a pension professional has.

	Mean	St. Dev.	<i>N</i>
<i>A. Pension professionals</i>			
Male	0.84	0.37	51
Age	49	12	51
Partner	0.84	0.37	51
Children	2	1	51
Experience	15	9	51
<i>B. General population</i>			
Male	0.48	0.50	2297
Age	56	8	2297
Partner	0.72	0.45	2297
Children	1	1	2297

Table 4: **Risk preferences task (Dave et al., 2010; Eckel and Grossman, 2008; Eckel and Grossman, 2002).** Individuals choose which gamble to play, all of which involve a 50/50 chance of a low or high payoff. The implied Coefficient of Relative Risk Aversion (CRRA) range is based on the power utility function $U(x) = \frac{x^{1-\gamma}}{1-\gamma}$. Each range is calculated by equalizing the gamble to its neighbors, and computing the value of γ that makes the individual indifferent in utility between each adjacent gamble.

Choice	Low payoff	High payoff	Exp. return	St. Dev.	Implied CRRA range
Gamble 1	5600	5600	5600	0	$\gamma > 3.46$
Gamble 2	4800	7200	6000	1200	$1.16 < \gamma < 3.46$
Gamble 3	4000	8800	6400	2400	$0.71 < \gamma < 1.16$
Gamble 4	3200	10400	6800	3600	$0.50 < \gamma < 0.71$
Gamble 5	2400	12000	7200	4800	$0 < \gamma < 0.50$
Gamble 6	400	14000	7200	7000	$\gamma < 0$

Table 5: **Time preferences task (Rieger et al., 2015; Wang, 2017)**. Individuals state the amount X that makes them indifferent between receiving options A. and B. The 1-year discount rate proxies the (annual) degree of present bias, the 5-years discount rate proxies the (annual) degree of long-term patience. If the 1-year rate exceeds the 5-years rate, then this is suggestive evidence for present bias, i.e., time-inconsistent discounting.

Assume for this question that prices in the future remain equal to the prices today (no inflation).
Fill in an amount X_1 such that option B is as attractive as option A.

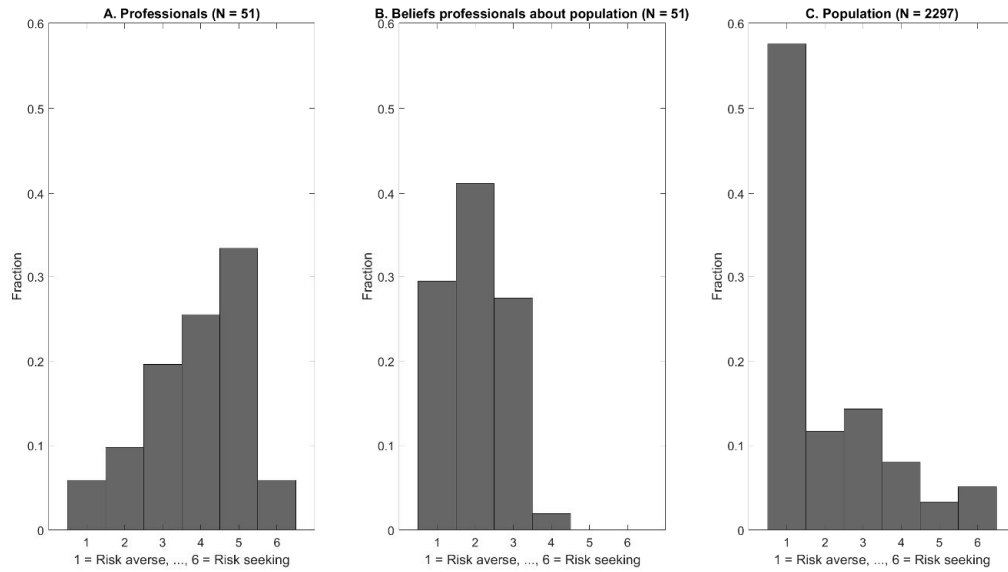
- A. Receive €10,000 now
- B. Receive X_1 over 1 year

Assume for this question that prices in the future remain equal to the prices today (no inflation).
Fill in an amount X_5 such that option B is as attractive as option A.

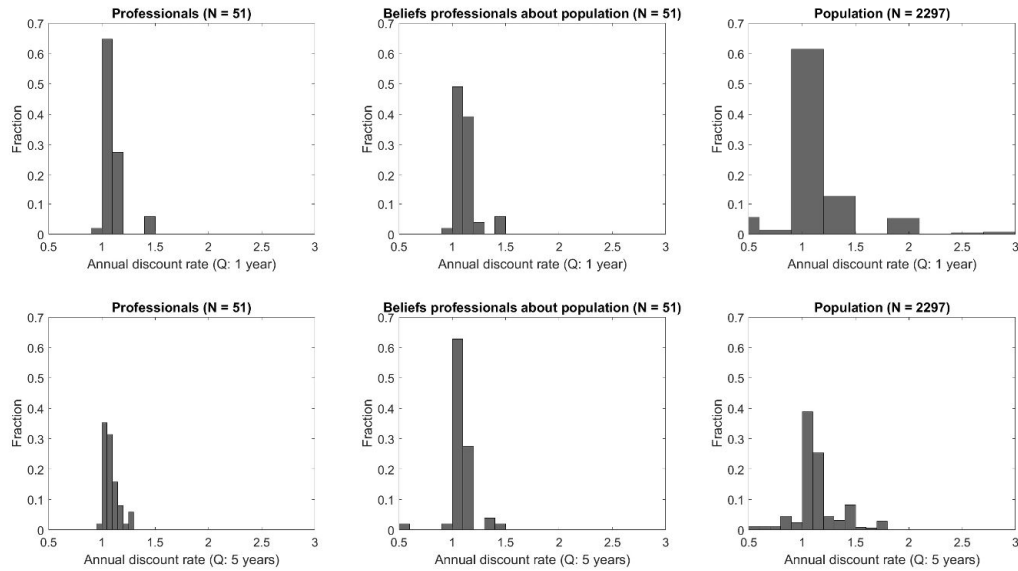
- A. Receive €10,000 now
 - B. Receive X_5 over 5 years
-

Table 6: **Preferences and beliefs for ESG: pension professionals and the general population.**

	Mean	St. Dev.	N
<i>I. Motives: Financial v.s. ESG</i>			
A. Pension professionals	2.76	0.93	51
B. Beliefs pension professionals about general population	2.12	0.59	51
<i>t</i> -test, H_0 : equal means A and B. <i>p</i> -value = 0.00			
<i>II. Return ESG portfolio</i>			
A. Pension professionals	3.04	0.66	51
B. Beliefs pension professionals about general population	2.27	0.72	51
<i>t</i> -test, H_0 : equal means A and B. <i>p</i> -value = 0.00			
<i>III. Volatility ESG portfolio</i>			
A. Pension professionals	2.90	0.81	51
B. Beliefs pension professionals about general population	3.27	0.78	51
<i>t</i> -test, H_0 : equal means A and B. <i>p</i> -value = 0.02			



(a) **Risk.** This figure displays the observed distributions of preferences and beliefs for risk by sample type. The risk preferences, and its beliefs, are measured by an adapted version of the single choice list method of Eckel and Grossman (2002) and Eckel and Grossman (2008). Risk preferences are captured by one of the six risk preference categories.



(b) **Time.** This figure displays the observed distributions of preferences and beliefs for time by sample type. The time preferences, and its beliefs, are measured by an adapted version of the task of Rieger et al. (2015). Time preferences are captured by a subjective annual discount rate.

Figure 4: Distributions of preferences and beliefs for risk and time: pension professionals and the general population.

Supplementary Information: SURVEY TEXT

JORGO T.G. Goossens

This Supplementary Information contains the text of the purposely-built online survey experiment, which collected the data that are analyzed in the paper.

All text is translated from Dutch (original) to English with DeepL.

Intro

Thank you for your participation! The questions will take a few minutes to complete and can be completed through Tuesday, August 22. The answers will be used as input for the APG Summercourse and research purposes. There are no wrong or right answers.

The questionnaire is by Jorgo Goossens and deals successively with risk, time and ESG preferences. It covers your own personal preferences, the preferences of your average fund participant from your role as a director, and predictions about the average Dutchman and your average fellow director. The questionnaire concludes with some socio-demographic questions.

Note: Answers will not be shared with others. Only aggregate results will be shown, so individual responses remain confidential.

Risk preferences

Suppose we flip a euro and money is paid out depending on whether it lands on heads or tails.

	Tails	Heads
Game 1	€5600	€5600
Game 2	€4800	€7200
Game 3	€4000	€8800
Game 4	€3200	€10400
Game 5	€2400	€12000
Game 6	€400	€14000

1. Which game will you choose to play personally? You can only choose one.

[dropdown menu: Game 1, Game 2, Game 3, Game 4, Game 5, Game 6]

2. From your role as director, which game do you choose to represent the preferences of your average fund participant?

[dropdown menu: Game 1, Game 2, Game 3, Game 4, Game 5, Game 6]

3. Prediction: Which game is chosen on average by the Dutch population?

[dropdown menu: Game 1, Game 2, Game 3, Game 4, Game 5, Game 6]

Time preferences

A. For this question, assume that prices in the future remain the same as today's prices (no inflation).

(A) Receive €10,000 now

(B) Receive €X in 1 year

1. Enter the amount X so that option B is as attractive as option A to yourself personally.

$X = € \dots$

2. From your role as a director, enter the amount X so that option B is as attractive as option A for your average fund participant.

$X = € \dots$

3. Predict: What is the average amount X chosen by the Dutch population such that option B is as attractive as option A?

$X = € \dots$

B. For this question, assume that prices in the future remain the same as today's prices (no inflation).

(A) Receive €10,000 now

(B) Receive €X in 5 years

1. Enter the amount X so that option B is as attractive as option A to yourself personally.

$X = € \dots$

2. From your role as a director, enter the amount X so that option B is as attractive as option A for your average fund participant.

$X = € \dots$

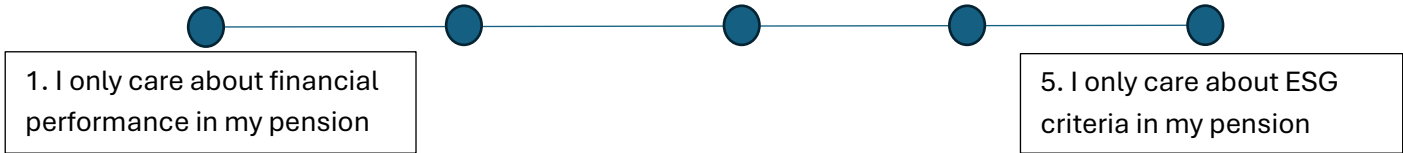
3. Predict: What is the average amount X chosen by the Dutch population such that option B is as attractive as option A?

$X = € \dots$

Environmental, Social, and Governance (ESG)

ESG criteria are environmental, social, and governance criteria for a company's activities that may impact society or the environment.

A. Check the following 5-point scale:



1. What do you personally choose for your own retirement?

[dropdown menu: 1. "I only care about financial performance in my retirement," 2., 3., 4., 5. "I only care about ESG criteria in my retirement"]

2. From your role as a director, which pension do you choose to represent the preferences of your average fund participant?

[dropdown menu: 1. "I only care about financial performance in my pension", 2., 3., 4., 5. "I only care about ESG criteria in my pension"]

3. Prediction: What is the average answer chosen by the Dutch population?

[dropdown menu: 1. "I only care about financial performance in my pension", 2., 3., 4., 5. "I only care about ESG criteria in my pension"]

B. Compared to the market, are the long-term returns on ESG invested portfolios: much higher, higher, equal, lower, or much lower?

1. What do you personally think?

[dropdown menu: much higher, higher, equal, lower, much lower]

2. Prediction: What is the average answer chosen by your peers at the APG Summercourse?

[dropdown menu: much higher, higher, equal, lower, much lower]

3. Prediction: What is the average answer chosen by the Dutch population?

[dropdown menu: much higher, higher, equal, lower, much lower]

C. Compared to the market, long-term volatility of ESG invested portfolios: much higher, higher, equal, lower, or much lower?

1. What do you personally think?

[dropdown menu: much higher, higher, equal, lower, much lower]

2. Prediction: What is the average answer chosen by your peers at the APG Summercourse?

[dropdown menu: much higher, higher, equal, lower, much lower]

3. Prediction: What is the average answer chosen by the Dutch population?
[dropdown menu: much higher, higher, equal, lower, much lower]

Socio-demographic data

1. Gender:

Male

Female

Other: ...

2. Highest education received: ...

3. Current marital status:

Partner (e.g., married or cohabiting).

No partner

4. Number of children (0, 1, 2, etc.): ...

5. Year of birth (e.g., 1960): ...

6. How many years of work experience do you have in the retirement industry? ... years

7. What sector do you represent as a pension fund administrator (e.g., civil service, construction, cleaning)? ...

The end

1. Did you find it difficult to answer the questions?

[Scale: 1. Absolutely no, 2., 3., 4., 5. Absolutely yes]

2. Did you find the questions clear?

[Scale: 1. Absolutely no, 2., 3., 4., 5. Absolutely yes]

3. Do you have any comments?

No.

Yes: ...

Thank you very much for your participation!

Questions? Please contact Dr. Jorgo Goossens (Radboud University Nijmegen, Tilburg University, Netspar): jorgo.goossens@ru.nl